

The Double-End Sea-Going Auxiliary THISTLE

Designed by
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AMONG the many thousands of readers of *MoToR Boating* there are naturally diversified interests in the matter of boat types and models. One will ask for a fast out-board racer; another will seek the utmost in comfort and the minimum in power; a third group enjoys the thrill of a fast runabout; while a veritable army displays interest in cruising motor boats; recently a new faction asks for sailing craft and auxiliaries: it is for the latter group that we have prepared the plans of *Thistle*.

Thistle is a wholesome little ship. It will be difficult to find a more seaworthy model. She has behind her a heritage that cannot be matched. Long hundreds, aye, thousands, of years ago intrepid seamen cruised the heaving Atlantic in double-end ships of somewhat similar character. *Lief the Lucky*, *Eric the Red*—sea kings of the countries lying east of the North Sea—sailed their fast and able Long Serpents and Dragons beyond the rim of the horizon. Quite beyond, and landed them upon the shore of Greenland, Labrador, and even our own New England coast.

Because of intrinsic features, the double-end boat, as developed by the fisher folk of Norway, Sweden and Denmark, remains supreme in its seagoing ability. The winds that urged the pointed sterned ships of *Lief Erikson* over stormy seas today caress the sails of craft that bear striking resemblance to the Viking ships of a thousand years ago. No other type of vessel has lived so many thousand years. And it has lived because it has excellence. There can be no better reason.

And once one looks upon the design of a double-end boat many salient points reveal themselves. Inherently the double-ender has great strength; it is perfectly balanced; it is simple to build; it is handsome and ship shape. The latter is enough to endear it to lovers of little ships and the sea.

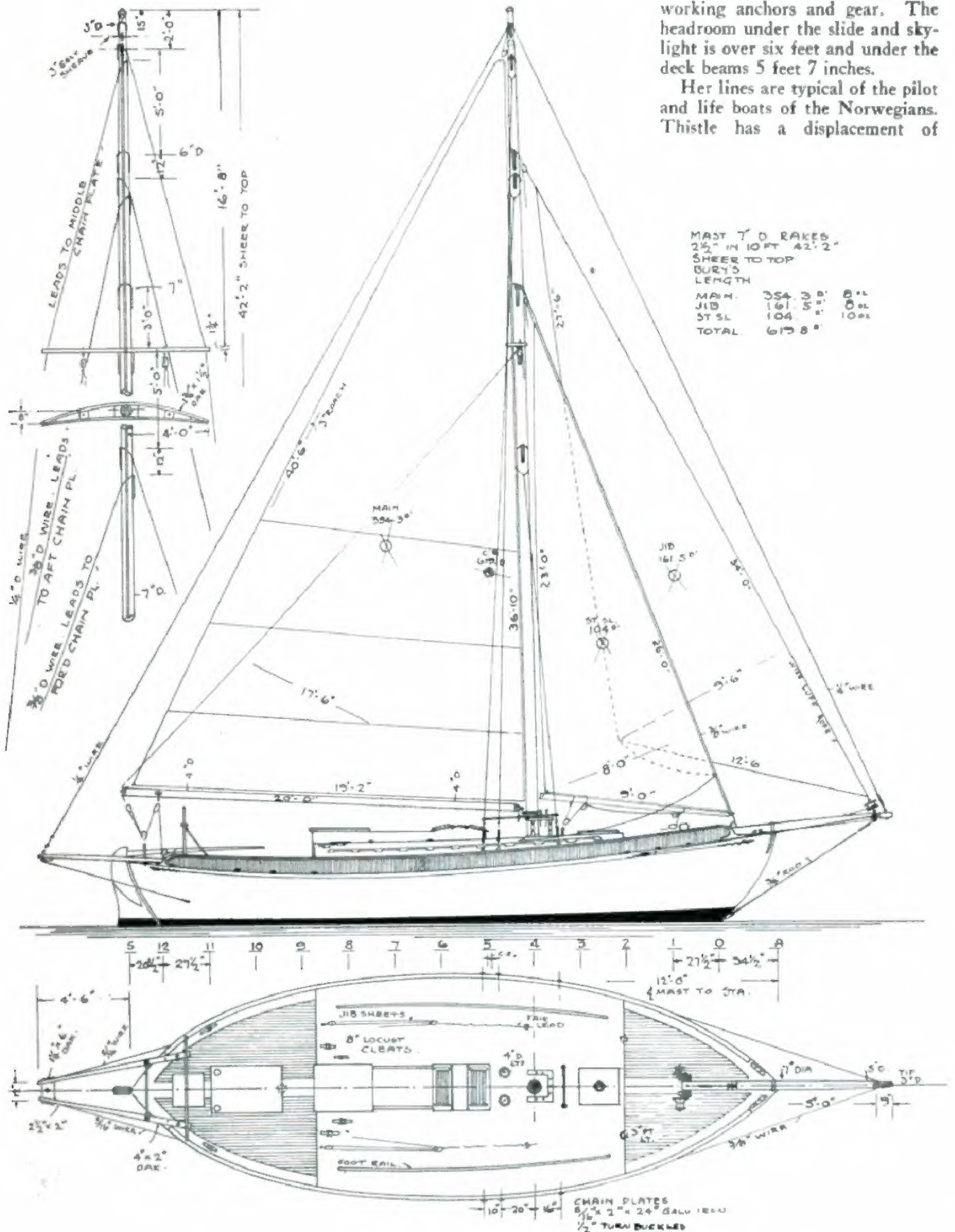
Opp. page: Construction plan with inboard profile. Below: Sail plan, rigging details, outboard profile, and deck arrangement of the sea-going double-ender Thistle

Thus in building Thistle you are assured of a small yacht of genuine worth-while-ness.

Thistle is 32 feet 1 inch in over all length, has a water line length of 27 feet 6 inches, a breadth of 11 feet, and a draft of 5 feet. She has generous freeboard but not so much as to appear badly or to present excessive windage, the latter being a grave fault with many small auxiliaries. She has a flush deck with a handy well forward for working anchors and gear. The headroom under the slide and skylight is over six feet and under the deck beams 5 feet 7 inches.

Her lines are typical of the pilot and life boats of the Norwegians. Thistle has a displacement of

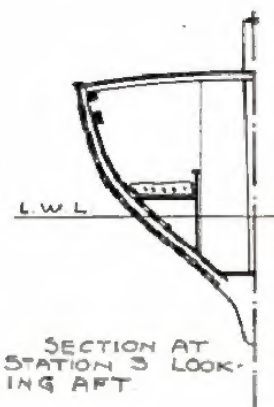
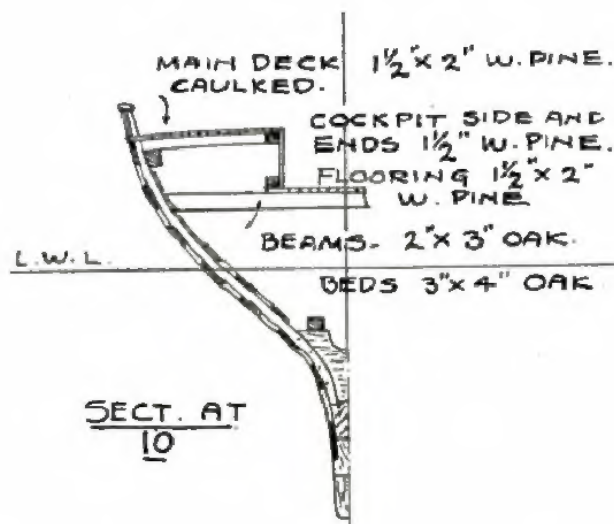
MAST T O RAKES
25" IN 10 FT 42' 2"
SHEER TO TOP
BURY'S
LENGTH
MAIN 354' 3" 8" L
JIB 161' 5" 8" L
ST SL 104' 10" L
TOTAL 619' 8" L



19,545 pounds, carries 4,700 pounds of iron on her keel, and 3,000 pounds of ballast inside. The latter should be cement and boiler punchings; this forms excellent clean ballast and contributes towards a clean and sweet bilge.

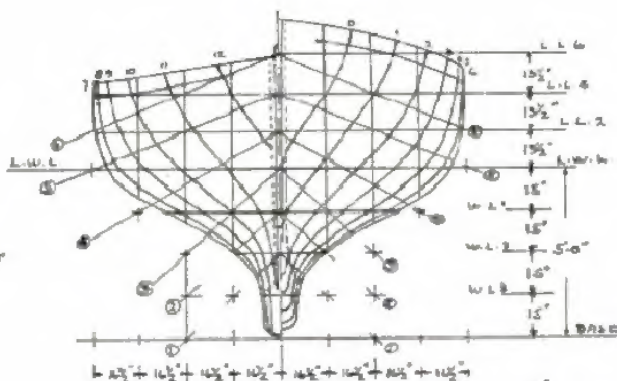
She is rigged as a cutter with jib-headed mainsail, staysail, and jib; jib-topsail might be carried to advantage in light weather but is not absolutely required. The mainsail spreads 354.3 square feet; the staysail, 104 square feet; and the jib, 161.5 square feet. This brings the total sail area to 619.8 square feet. The mainsail is fitted with Turner rolling reefer, and the jib with Wykeham-Martin furling gear. The mast should be hollow, 7 inches diameter at the butt and tapered as indicated on the sail plan. Besides the usual more or less standardized standing rigging the rig is fitted with permanent back stay lead from proper boomkin of a very practical design. Dimensions for the spars, sails, and rigging are given in detail on the sail and deck plans.

The cabin is laid out for the accommodation of four. This is the maximum complement for a yacht of this length and purpose. Cabins of small craft are enchanting places whichever way they are laid out; but no two yachtsmen can agree upon the ideal layout. There are certain advantages in the plan as shown. The galley being aft, and the toilet room as well, wet weather is not likely to dribble down on the berths and living quarters; and since the berths are located at the widest point of the hull we have a maximum amount of room between the

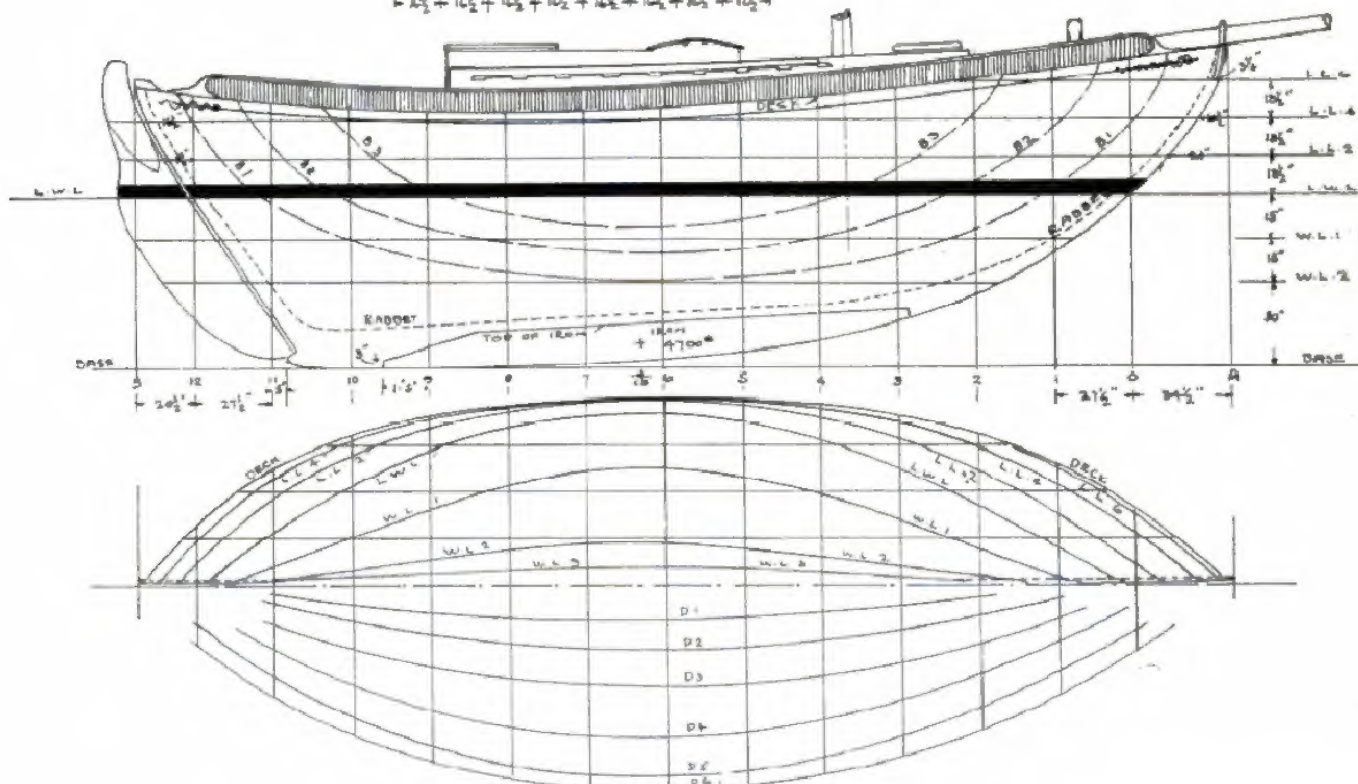


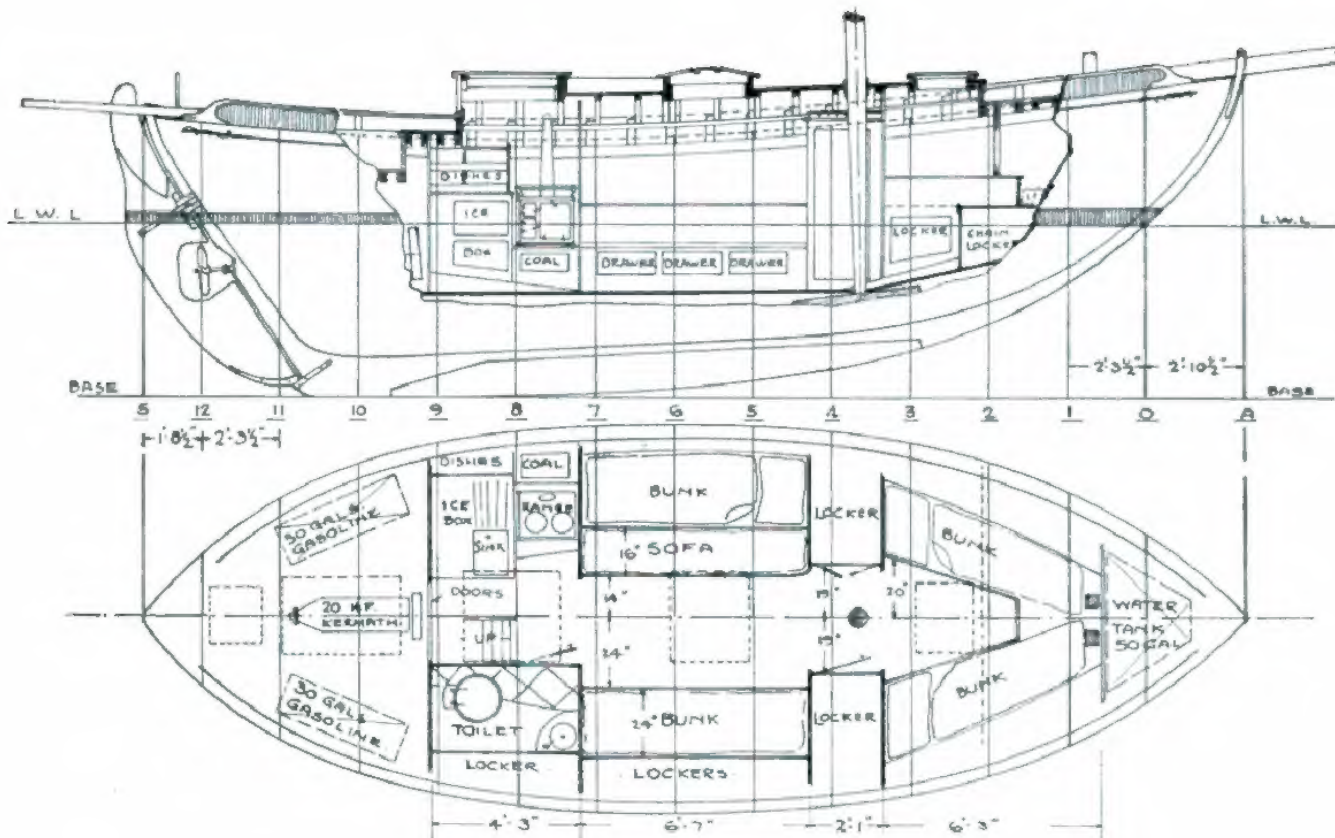
DIMENSIONS OF
 L.O.A. 32'-1"
 L.W.L. 27'-6"
 BREADTH 11'-9"
 DEPTH 5'-0"
 F. BOARD 4'-6"
 STERN 3'-4"

DISPL. 15,545#
 IRON KEEL 4,700#
 BALLAST INSIDE 3,000#
 SAIL AREA 619.8'



Line drawings which are necessary for the construction of Thistle with sections at stations 3 and 10





berth fronts and for the berths themselves; this width also applies to the lockers shown. The two built in berths forward provide a quiet place for the crew off watch to sleep. From practice the location and capacity of fuel and water tanks seem satisfactory. The motor is easily get-at-able and quite out of the way under the bridge deck and cockpit floor. There is far more room below here than the plans convey. With hatch in the aft deck excellent ventilation is provided.

Since all motors are perfectly reliable the choice of power is largely one of preference. But remember in this connection that any thing over 30 h.p. is excessive; by the same token do not install a motor of less than 10 h.p. The latter will provide speeds up to $5\frac{1}{2}$ miles an hour; the former up to $7\frac{1}{2}$ miles.

The construction is heavy. The keel will be made from white oak sided 12 inches and moulded 10 inches. It should be in a single length. Yellow pine, red wood and Douglas fir

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Inboard profile and cabin arrangement plan showing the extra large cabin space and roomy bunks. Below: the table of offsets which must be laid down in full size

TABLE OF OFFSETS													
32'-1" DOUBLEENDER - THISTLE 4													
STATION	A	B	O	1	2	3	4	5	6	7	8	9	10
HEIGHTS -													
L.W.L. TO SHEER	4'-5"	4'-1"	3'-5"	3'-6"	3'-2"	3'-0"	2'-9"	2'-8"	2'-7"	2'-6"	2'-7"	2'-8"	2'-10"
SHEER TO RAIL			0'-8"	0'-8"	0'-8"	0'-8"	0'-8"	0'-8"	0'-8"	0'-8"	0'-8"	0'-8"	0'-8"
DECK CROWN					0'-4"	0'-6"	0'-7"	0'-8"	0'-8"	0'-8"			
BASE TO B 3					7'-5"	5'-5"	4'-10"	4'-3"	4'-1"	4'-2"	4'-6"	5'-3"	6'-10"
B 2					7'-0"	5'-5"	4'-5"	3'-5"	3'-5"	3'-4"	3'-5"	3'-8"	4'-14"
B 1					7'-1"	5'-3"	4'-0"	3'-3"	2'-10"	2'-8"	2'-7"	2'-7"	2'-3"
RABBIT					5'-5"	3'-7"	2'-5"	2'-2"	1'-10"	1'-7"	5' STRAIGHT	1'-2"	1'-2"
TO TOP OF IRON								1'-8"	5' STRAIGHT	1'-14"	0'-7"		
BOTTOM KEEL					5'-0"	3'-4"	2'-1"	1'-4"	0'-10"	0'-6"	0'-3"	0'-15"	0'-0"
L.W.L. & SHAFT												1'-1"	5' STRAIGHT 1'-1"
HALF BREADTHS													
DECK	0'-1"	2'-3"	3'-4"	4'-5"	5'-0"	5'-4"	5'-5"	5'-6"	5'-5"	5'-3"	5'-0"	4'-4"	3'-4"
L.L. 6		2'-1"	3'-5"	4'-5"									0'-1"
L.L. 4		1'-6"	2'-11"	4'-0"	4'-5"	5'-2"	5'-3"	5'-3"	5'-4"	5'-2"	4'-10"	4'-2"	3'-11"
L.L. 2		0'-7"	2'-1"	3'-4"	4'-4"	4'-11"	5'-3"	5'-3"	5'-4"	5'-1"	4'-7"	3'-10"	2'-6"
L.W.L.			1'-10"	2'-4"	3'-5"	4'-3"	4'-10"	5'-0"	4'-11"	4'-7"	3'-11"	2'-11"	1'-6"
W.L. 1			0'-3"	1'-1"	1'-11"	2'-8"	3'-2"	3'-5"	3'-4"	2'-11"	2'-3"	1'-5"	0'-6"
W.L. 2				0'-5"	0'-6"	0'-10"	1'-2"	1'-3"	1'-3"	1'-1"	0'-9"	0'-3"	0'-2"
TOP OF KEEL				0'-12"	0'-3"	0'-5"	0'-6"	0'-7"	0'-7"	0'-6"	0'-5"	0'-3"	0'-1"
BOTTOM OF KEEL	0'-1"	0'-0"	0'-0"	0'-1"	0'-1"	0'-2"	0'-4"	0'-5"	0'-5"	0'-5"	0'-4"	0'-3"	0'-1"
DIAGONALS													
0					0'-3"	0'-6"	0'-8"	0'-10"	0'-11"	0'-11"	0'-10"	0'-8"	0'-3"
1					0'-10"	1'-3"	1'-7"	1'-9"	1'-10"	1'-9"	1'-7"	1'-4"	0'-6"
2						0'-11"	1'-8"	2'-2"	2'-7"	2'-10"	2'-11"	2'-10"	1'-2"
3							0'-6"	1'-7"	2'-7"	3'-4"	4'-3"	4'-4"	3'-7"
4								1'-3"	2'-5"	3'-6"	4'-4"	5'-7"	5'-6"
5									1'-0"	2'-2"	3'-4"	4'-7"	5'-11"
6													

DIMENSIONS IN FEET AND INCHES - TO OUT SIDE OF PLANKING

THE DOUBLE-END SEA-GOING AUXILIARY, THISTLE

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may be substituted for oak, these woods being excellent for boat building purposes. The iron will be cast to the form indicated being careful to round off the bottom as shown. The iron will be fastened to the keel with seven $1\frac{1}{2}$ inch diameter galvanized iron bolts. Place lead washers next to the wood at every bolt in addition to the usual galvanized iron washer. And take up the nuts with a long handled wrench. The keel bolts must be something more than tight otherwise leakage will occur. The two end bolts will be in the center line; the others staggered 3 inches each side of the center line.

The stem will be made from white oak sided 6 inches and built up from four members as indicated. These should be through fastened using $\frac{5}{8}$ inch diameter galvanized bolts. There should be at least three bolts in each end of the scarps between the several members of the stem assembly.

THE stern post will also be made from white oak sided 6 inches, or from the substitute materials as outlined in the foregoing paragraph. Fastenings will be the same as for the stem. A 6 inch knee through bolted to stern post and keel complete the stern assembly. The after edge of the stern post will be tapered to a width of $2\frac{1}{4}$ inches this being the thickness of the rudder.

The rudder will be made from $2\frac{1}{4}$ inch thick white oak and will be hung on bronze straps. Both these should extend well across the blade. In addition to the straps the several widths of oak that form the rudder blade will be fastened with $\frac{1}{2}$ inch diameter galvanized rod. The head of the rudder is to be fitted with cheek pieces made from $\frac{3}{8}$ inch white oak. The lower ends to be tapered to about $\frac{3}{8}$ inches. The tiller, made from $2\frac{1}{4}$ inch locust, houses between the cheek pieces. The tiller should be 6 feet 9 inches long and tapered to 1 inch diameter at its forward end.

The frames will be white oak and steam bent. These are to finish $2\frac{1}{2}$ by 3 inches, and set on $13\frac{3}{4}$ inch centers. Bend the frames on the flat. The heels of the frames must be mortised into the sides of the keel, stem and stern post. Fasten with two galvanized boat nails.

The floor timbers will be made from 3 by 4 inch white oak, these to be set on the forward face of every pair of frames. Notice that there are three deep floor timbers under the motor beds.

Fasten the floor timbers into the keel with two $\frac{5}{8}$ inch galvanized iron drift bolts carefully staggered and toed. Also fasten to the sides of the frames with galvanized boat nails. Bore for all fastenings with a bit somewhat smaller in diameter than the fastenings.

The clamps will be made from 4 by 4 inch fir or yellow pine. Bolt heads of frames to clamp with $\frac{3}{4}$ inch galvanized bolts. It is good practice to taper the ends of the clamps to facilitate bending. At both the bow and stern there will be a 3 inch hackmatack knee. This should be through bolted to the heads of stern post and stem, and into the clamps as well.

In building it must be noted that the frames from stations 2 to the one abaft 8 extend above the deck line. Forward of station 2 the frames end at the deck line. This also holds true of the frames abaft station 9. A shelf made from 3 by 3 inch fir is bolted along the tops of these higher frames, and the deck beams rest upon these. Fasten this part of the construction throughout with galvanized iron bolts, $\frac{3}{8}$ inches in diameter.

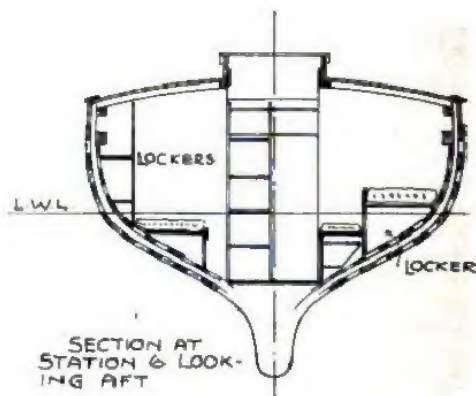
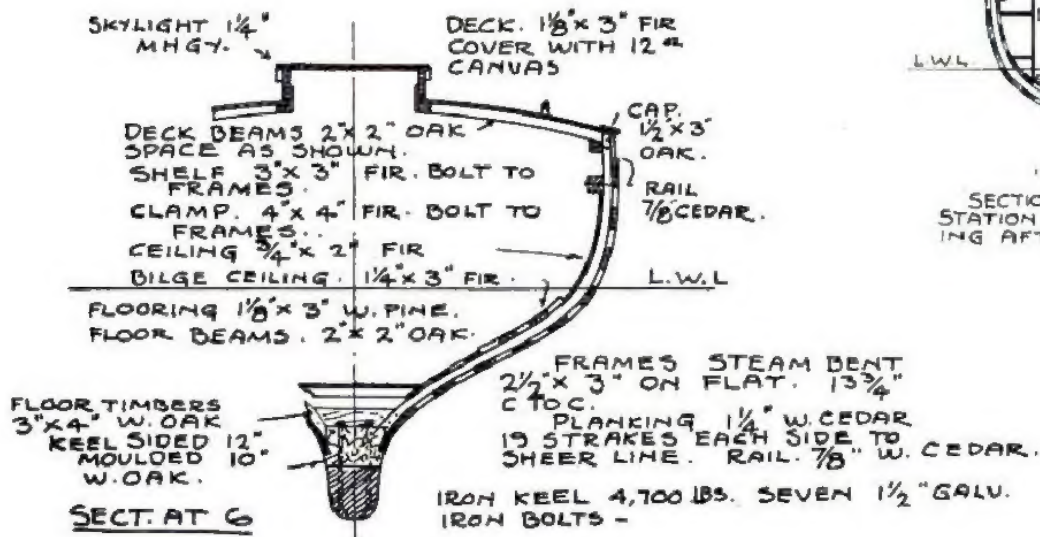
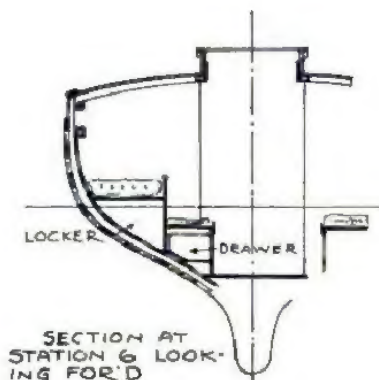
THE deck beams are all to be made from 2 by 2 inch white oak. There is a 10 inch crown in the beams from station 2 to the bridge deck, and 3 inches crown to the beams in the well decks forward and aft. Before laying the deck fit the doubling at the mast and cut in the openings for the main companionway, skylight, hatches, and cockpit well.

The forward and after well decks will be laid with $1\frac{1}{2}$ by 2 inch white pine; this will be caulked and payed, therefore must be secured with countersunk fastenings plugged. The cockpit floor will be built in the same manner.

Cockpit sides and ends, and the forward and after bulkheads of the raised deck will be made from $1\frac{3}{4}$ inch white pine. Fasten to the main deck with $\frac{1}{2}$ inch diameter galvanized bolts made from rodding.

The raised deck will be laid with $1\frac{1}{8}$ by 3 inch tongue and groove fir or white pine. Fasten with galvanized boat nails. Cover the deck with 12 oz. canvas laid in Jeffery's marine glue. The edge of the canvas will be covered with the $1\frac{1}{2}$ by 3 inch oak rail cap. At the companion way and skylight, the canvas will be

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Midship construction section and details at station 6 looking both fore and aft

THE AUXILIARY THISTLE

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turned up inside the coamings for these pieces of deck furniture and thus prevent leakage below.

The planking will be laid with $1\frac{1}{4}$ inch white cedar. There are several other excellent woods for planking, among these, Philippine mahogany, long leaf yellow pine, Peruvian cedar, Douglas fir and red wood. However of these the best is white cedar. There will be 19 strakes of planking each side of the keel measured to the sheer line; then with the top strake or bulwark rail one more. This strake, however, will be only $\frac{3}{8}$ inches thick setting back $\frac{3}{8}$ inches from the top of the sheer strake. The planking will be fastened with galvanized boat nails countersunk and having their heads plugged with wooden boat plugs. Galvanized nails are excellent for fastenings and in many respects are, I think, just as good as bronze screws or copper rivets.

THERE are five strakes of bilge ceiling each side made from $1\frac{1}{4}$ by 3 inch fir. These strakes should be in single lengths or at least scarphed and the butts so made well scattered. The balance of the ceiling will be $\frac{3}{4}$ by 2 inch fir. Both the heavy strakes and the lighter ceiling will be fastened with galvanized boat nails. It seems to me that it is far better to use comparatively light strakes through the bilge for strength rather than one heavy member. In the former construction the fastenings are distributed over a considerable area of the bilge, while in the latter a row of fastenings extend in a single line the full length of the boat.

The floor beams will be made from 2 by 2 inch oak, fir, or yellow pine. They will be spaced on the same centers as the frames, $13\frac{3}{4}$ inches. The cabin flooring will be made from $1\frac{1}{8}$ by 3 inch white pine. Tongue and groove stuff will be best. And if you would have a floor to be proud of finish in the same style as the deck using black putty in the seams and after being perfectly smoothed finished with four coats of varnish. This is ship-shape and belongs in a cabin; more in keeping aboard a yacht than oilcloth or linoleum.

The interior joiner work will be made from $\frac{3}{8}$ inch hard pine or mahogany. These woods in combination with teak or black walnut. If, however, the interior is to be painted white or some color white pine should be used for the bulkheads and joiner work. There is something rather cozy about a natural wood finish in the cabin of a yacht, paint seems rather cold for the cabin of a small boat.

The deck joiner work will be finished in mahogany; since there are only the two hatches, the companion slide, the skylight, rail caps, and foot rails, it would pay to use teak for these fixtures. Teak is the wood supreme for boat building; it neither rots, nor swells, nor discolors from the weather. It needs no preservative and very nearly outlasts time itself. Fine wood, teak.

Thus we leave the building of Thistle, one of the loveliest little ships imaginable.

And, shipmates, don't change her! Don't paint the lily!

If she is not your dream ship, write the editor for a list and description of all the designs that have been published in MoToR BOATING. Among these there must be a craft that will suit your particular requirements. Readers who plan to build Thistle can secure blue print copies of the original designer's drawings reproduced to a scale of $\frac{1}{2}$ inch to the foot at moderate cost. Write to the Editor, MoToR BOATING, 959 Eighth Avenue, New York, N. Y.

